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EXAMINER

KIM, DAVID S

ART UNIT	PAPER NUMBER
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2633

DATE MAILED: 10/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/783,227	Applicant(s) TAGA ET AL.	
	Examiner David S. Kim	Art Unit 2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/546,917.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>19 February 2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The specification for the instant application matches/corresponds closely with the specification for a related Application Serial No. 10/784,048. During a phone conversation with Mr. D. Bruce Prout, Esq. on 30 September 2004, Examiner discussed various objections to informalities in the specification for Application Serial No. 10/784,048 and respective corrections thereto. Since the specifications for both of these applications match/correspond closely, Examiner encourages Applicant to apply the discussed corrections to both of these applications appropriately.

Claim Objections

2. **Claims 2-3, 5, 8-9, 11, 15-16, 18-19, and 22** are objected to because of the following informalities:

In claims 2-3, 8-9, 15-16, and 18-19, l. 2, all these claims use “electricalally” where – electrically – may be intended.

In claim 5, “selectively applies...to the discriminator and the clock extractor” is used where – selectively applies...to the discriminator or the clock extractor – may be intended. See p. 19, l. 26-31.

In claim 11, “selectively applies...to the first photodetector and the second photodetector” is used where – selectively applies...to the first photodetector or the second photodetector – may be intended. See p. 19, l. 26-31.

In claim 22, the claim ends with a semi-colon instead of a period.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1-2, 4, 20-23, and 25-26** are rejected under 35 U.S.C. 102(b) as being anticipated by Fukuoka (JP 03013036 A).

Regarding claim 1, Fukuoka discloses:

An optical receiving apparatus (Drawing 1), comprising:

a photodetector (PD in 11n) for converting a signal light input received from an optical transmission line to an electrical signal;

a signal brancher (branching lines after preamplifier 13n) for branching the electrical signal from the photodetector to a first electrical signal component and a second electrical signal component;

a discriminator (comparator 15n) for discriminating the first electrical signal component;

a clock extractor (clock signal on lower branching lead from preamplifier 13n) for extracting a clock having an amplitude from the second electrical signal component; and

a threshold controller (ATC 14) for controlling a discrimination threshold of the discriminator according to the amplitude of the extracted clock, wherein the discriminator discriminates the first electrical signal component according to the discrimination threshold controlled by the threshold controller.

Regarding claim 2, Fukuoka discloses:

The optical receiving apparatus of claim 1, further comprising a first linear amplifier (preamplifier 13n) electrically coupled between the photodetector and the signal brancher for amplifying the electrical signal from the photodetector.

Regarding claim 4, Fukuoka discloses:

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The optical receiving apparatus of claim 1, wherein the signal brancher simultaneously (no delay is indicated in the circuit in Drawing 1) applies the electrical signal from the photodetector to the discriminator and the clock extractor.

Regarding claim 20, Fukuoka discloses:

An optical receiving apparatus (Drawing 1), comprising:

a photodetector (PD in 11n) for converting an optical signal input from an optical transmission line to an electrical signal;

a clock extractor (clock signal on lower branching lead from preamplifier 13n) for extracting a clock from the electrical signal;

a threshold controller (ATC 14) for determining a signal receiving discrimination threshold according to an amplitude of the extracted clock from the clock extractor; and

a discriminator (comparator 15n) for discriminating the electrical signal according to the signal receiving discrimination threshold determined by the threshold controller.

Regarding claim 21, Fukuoka discloses:

The optical receiving apparatus of claim 20, wherein the threshold controller includes information about clock amplitude (threshold level extracted from the clock signal) versus threshold (the threshold level applied to the comparators 15) characteristics and determines the signal receiving discrimination threshold by collating an amplitude of the extracted clock from the clock extractor with the clock amplitude versus threshold characteristics (i.e. the threshold level extracted from the clock signal serving as the threshold level applied to the comparators 15).

Regarding claim 22, Fukuoka discloses:

The optical receiving apparatus of claim 20, further comprising a signal brancher (branching lines after preamplifier 13n) for branching the electrical signal from the photodetector to a first electrical signal component and a second electrical signal component.

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Regarding claim 23, Fukuoka discloses:

The optical receiving apparatus of claim 22, wherein the signal brancher simultaneously (no delay is indicated in the circuit in Drawing 1) applies the electrical signal from the photodetector to the discriminator and the clock extractor.

Regarding claim 25, Fukuoka discloses:

A method for optical reception (Drawing 1), comprising:

converting (PD in 11n) an optical signal input from an optical transmission line to an electrical signal;

extracting (clock signal on lower branching lead from preamplifier 13n) a clock from the electrical signal;

determining a signal receiving discrimination threshold (ATC 14) according to an amplitude of the clock; and

discriminating (comparator 15n) the electrical signal according to the determined signal receiving discrimination threshold.

Regarding claim 26, Fukuoka discloses:

The method of claim 25 wherein the determining step of the signal receiving discrimination threshold is performed by collating (i.e. the threshold level extracted from the clock signal serving as the threshold level applied to the comparators 15) an amplitude of the extracted clock with clock amplitude (threshold level extracted from the clock signal) versus threshold (the threshold level applied to the comparators 15) characteristics.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. **Claims 3, 5-19, and 24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuoka.

Regarding claim 3, Fukuoka does not expressly disclose:

The optical receiving apparatus of claim 1, further comprising a second linear amplifier electrically coupled between the clock extractor and the threshold controller for amplifying the extracted clock.

However, amplifiers are extremely commonplace devices in the art. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to place an amplifier between the clock extractor and the threshold controller. One of ordinary skill in the art would have been motivated to do this since to provide amplitude control to the signal input into threshold controller for any number of conventional reasons for an amplifier, such as signal amplification for easier detection, controlling the signal amplitude to fall within a

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particular operating amplitude range, or amplitude compensation for signal loss due to signal propagation.

Regarding claim 5, Fukuoka does not expressly disclose:

The optical receiving apparatus of claim 1, wherein the signal brancher selectively applies the electrical signal from the photodetector to the discriminator and the clock extractor.

However, selective application of signals is an extremely common practice in the art. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to arrange the signal brancher to selectively apply the electrical signal from the photodetector to the discriminator and the clock extractor. One of ordinary skill in the art would have been motivated to do this to choose when to receive signals or not. For example, if one would like to turn off the receiving device to save power or to cease communication, one would select to not apply the communication signal to the receiver output. Such selection could occur at any number of locations along the signal lines of Fukuoka, including the signal brancher.

Regarding claim 6, Fukuoka does not expressly disclose:

The optical receiving apparatus of claim 1, wherein the threshold controller is preprogrammed with information to indicate a relation between the clock amplitude and an optimum threshold.

However, preprogramming components with information is a standard practice in the art. The apparatus of Fukuoka already applies a relation between the clock amplitude (threshold level extracted from the clock signal) and an optimum threshold (the threshold level applied to the comparators 15). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to indicate this relation by preprogramming the threshold controller with information. One of ordinary skill in the art would have been motivated to do

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this so that the apparatus of Fukuoka is prepared in advance to receive signals according to the intended relation between the clock amplitude and the optimum threshold.

Regarding claim 7, claim 7 is an apparatus claim that corresponds largely to the apparatus claim 1. Therefore, the recited means in apparatus claim 1 read on the corresponding means in apparatus claim 7. Claim 7 also includes limitations absent from claim 1. These limitations are:

an optical signal brancher for branching a signal light input received from an optical transmission line to a first optical signal component and a second optical signal component;

a first photodetector for converting the first optical signal component to a first electrical signal; and

a second photodetector for converting the second optical signal component to a second electrical signal.

Fukuoka does not expressly teach the arrangement of photodetectors and branchers (optical and/or electrical) of these limitations; however, the function of each limitation is taught in Drawing 1. That is, Fukuoka teaches the eventual conversion of the input signal light into electric signals that are subsequently distributed to the discriminator and evaluator. Also, photodetectors and branchers (optical and electrical) are extremely well known and common in the art. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to employ an arrangement of photodetectors and branchers of claim 7. One of ordinary skill in the art would have been motivated to do this since they accomplish the function of Fukuoka (Drawing 1), the eventual conversion of the input signal light into electric signals that are subsequently distributed to the discriminator and evaluator. Additionally, using this arrangement provides the benefit of design flexibility to accommodate various operational situations.

Regarding claim 8, Fukuoka discloses:

The optical receiving apparatus of claim 7, further comprising a first linear amplifier (function of preamplifier 13n in Drawing 1) electrically coupled between the first photodetector (see treatment of claim 7 above) and the discriminator for amplifying the first electrical signal from the first photodetector.

Regarding claim 9, Fukuoka does not expressly disclose:

The optical receiving apparatus of claim 7, further comprising a second linear amplifier electrically coupled between the clock extractor and the threshold controller for amplifying the extracted clock.

However, amplifiers are extremely commonplace devices in the art. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to place an amplifier between the clock extractor and the threshold controller. One of ordinary skill in the art would have been motivated to do this since to provide amplitude control to the signal input into the threshold controller for any number of conventional reasons for an amplifier, such as signal amplification for easier detection, controlling the signal amplitude to fall within a particular operating amplitude range, or amplitude compensation for signal loss due to signal propagation.

Regarding claim 10, Fukuoka discloses:

The optical receiving apparatus of claim 7, wherein the optical signal brancher (function of branching lines after preamplifier 13n) simultaneously (no delay is indicated in the circuit in Drawing 1) applies the signal light input to the first photodetector and the second photodetector.

Regarding claim 11, Fukuoka does not expressly disclose:

The optical receiving apparatus of claim 7, wherein the optical signal brancher selectively applies the signal light input to the first photodetector and the second photodetector.

However, selective application of signals is an extremely common practice in the art. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to arrange the optical signal brancher to selectively apply the signal light input to the first photodetector and the second photodetector. One of ordinary skill in the art would have been motivated to do this to choose when to receive signals or not. For example, if one would like to turn off the receiving device to save power or to cease communication, one would select to not apply the communication signal to the receiver output. Such selection could occur at any number of locations along the signal lines of Fukuoka, including the optical signal brancher.

Regarding claim 12, Fukuoka does not expressly disclose:

The optical receiving apparatus of claim 7, wherein the threshold controller is preprogrammed with information to indicate a relation between the clock amplitude and an optimum threshold.

However, preprogramming components with information is a standard practice in the art. The apparatus of Fukuoka already applies a relation between the clock amplitude (threshold level extracted from the clock signal) and an optimum threshold (the threshold level applied to the comparators 15). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to indicate this relation by preprogramming the threshold controller with information. One of ordinary skill in the art would have been motivated to do this so that the apparatus of Fukuoka is prepared in advance to receive signals according to the intended relation between the clock amplitude and the optimum threshold.

Regarding claims 13-14, claims 13 and 14 apparatus claims that both correspond to apparatus claim 6. Therefore, the recited means in apparatus claim 6 read on the corresponding means in apparatus claims 13-14.

Regarding claim 15, Fukuoka discloses:

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The optical receiving apparatus of claim 14, further comprising a first linear amplifier (preamplifier 13n in Drawing 1) electrically coupled between the photodetector and the signal brancher for amplifying the electrical input signal.

Regarding claim 16, Fukuoka does not expressly disclose:

The optical receiving apparatus of claim 14, further comprising a second linear amplifier electrically coupled between the clock extractor and the threshold controller for amplifying the extracted clock.

However, amplifiers are extremely commonplace devices in the art. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to place an amplifier between the clock extractor and the threshold controller. One of ordinary skill in the art would have been motivated to do this since to provide amplitude control to the signal input into the threshold controller for any number of conventional reasons for an amplifier, such as signal amplification for easier detection, controlling the signal amplitude to fall within a particular operating amplitude range, or amplitude compensation for signal loss due to signal propagation.

Regarding claim 17, Fukuoka does not expressly disclose:

The optical receiving apparatus of claim 13, further comprising a first photodetector for converting the first signal component to a first electrical signal to be input to the discriminator, and a second photodetector for converting the second signal component to a second electrical signal to be input to the clock extractor.

Fukuoka does not expressly teach the arrangement of photodetectors of these limitations; however, the function of each limitation is taught in Drawing 1. That is, Fukuoka teaches the eventual conversion of the input signal light into electric signals that are subsequently distributed to the discriminator and evaluator. Also, photodetectors are extremely well known and common in the art. At the time the invention was made, it would have been

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obvious to a person of ordinary skill in the art to employ an arrangement of photodetectors of claim 17. One of ordinary skill in the art would have been motivated to do this since they accomplish the function of Fukuoka (Drawing 1), the eventual conversion of the input signal light into electric signals that are subsequently distributed to the discriminator and evaluator. Additionally, using this arrangement provides the benefit of design flexibility to accommodate various operational situations.

Regarding claim 18, Fukuoka discloses:

The optical receiving apparatus of claim 17, further comprising a first linear amplifier (function of preamplifier 13n in Drawing 1) electrically coupled between the first photodetector (see treatment of claim 7 above) and the discriminator for amplifying the first electrical signal from the first photodetector.

Regarding claim 19, Fukuoka does not expressly disclose:

The optical receiving apparatus of claim 17, further comprising a second linear amplifier electrically coupled between the clock extractor and the threshold controller for amplifying the extracted clock.

However, amplifiers are extremely commonplace devices in the art. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to place an amplifier between the clock extractor and the threshold controller. One of ordinary skill in the art would have been motivated to do this since to provide amplitude control to the signal input into the threshold controller for any number of conventional reasons for an amplifier, such as signal amplification for easier detection, controlling the signal amplitude to fall within a particular operating amplitude range, or amplitude compensation for signal loss due to signal propagation.

Regarding claim 24, Fukuoka does not expressly disclose:

The optical receiving apparatus of claim 24, wherein the signal brancher selectively applies the electrical signal from the photodetector to the discriminator and the clock extractor.

However, selective application of signals is an extremely common practice in the art. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to arrange the signal brancher to selectively apply the electrical signal from the photodetector to the discriminator and the clock extractor. One of ordinary skill in the art would have been motivated to do this to choose when to receive signals or not. For example, if one would like to turn off the receiving device to save power or to cease communication, one would select to not apply the communication signal to the receiver output. Such selection could occur at any number of locations along the signal lines of Fukuoka, including the signal brancher.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Harada et al. is cited to show a related optical receiving apparatus that utilizes the amplitude of an extracted clock. Oguro is cited to show a related optical receiving apparatus that utilizes amplitude information of a clock signal to decide a threshold, which is used by a discriminator for discriminating a level of a data signal.

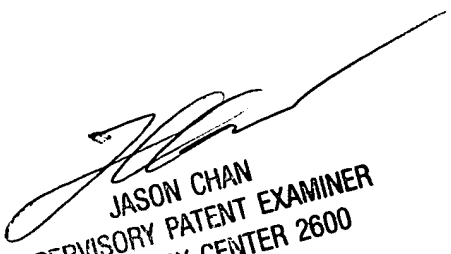
Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Kim whose telephone number is 571-272-3033. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571-272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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